REMARKS

Claims 3-7, 10-14 are pending in the present application. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 103, Obviousness

The examiner has rejected claims 3-7 and 10-14 under 35 U.S.C. § 103 as being unpatentable over Suzuki et al. in view of Cain et al. This rejection is respectfully traversed.

> Suzuki does not specifically disclose that the MR sensors are spin valve sensors. Cain et al. discloses a yoke spin valve MR read head (figure 3). It would have been obvious to one of ordinary still in the art at the time the invention was made to provide the reduced sensitivity sensor apparatus of Suzuki with the spin valve sensors taught by Cain et al.
>
> The rationale is as follows: Cain et al. utilize valve sensor in the yoke type read head with the purpose for taking advantage that the magnetoresistance is not dependent on the relative direction of the sense current. One of ordinary skill in the art would have been motivated to provide the reduced sensitivity sensor apparatus of Suzuki with the spin valve sensors as taught by Cain et al. as it would eliminate the dependency on the direction of the sense current.

Applicant's respectfully submit that the combination of Suzuki and Cain is not proper, and even if it were, it would not teach the claimed invention. Claim 3 is reproduced for discussion:

> 3. A spin valve sensor apparatus, comprising:
>
> a first spin valve sensor;
>
> a second spin valve sensor; and
>
> at least one flux guide, wherein a flux generated by the at least one flux guide is shared between the first spin valve sensor and the second spin valve sensor to thereby reduce a sensitivity of the spin valve sensor apparatus.

[Emphasis added.]

1. Suzuki refers to MR sensors, while the present invention refers to spin valve sensors. Cain also refers to spin valve sensors. Because MR sensors and spin valve sensors have order of magnitude difference in sensitivities, it would not be obvious to combine Suzuki and Cain to form the present invention.

On page 3 of the present Office action, Examiner admits that Suzuki deals with MR sensors and not spin valve sensors. Examiner argues that although Suzuki doesn't mention spin valve sensors, it is still obvious to combine Cain's teachings (which deal with spin valve sensors) with Suzuki's teachings. However, MR sensors, as taught by Suzuki, are of lower sensitivity than GMR or spin valve sensors, which are up to 20 times more sensitive. This difference makes the combination proposed by Examiner not obvious.

The high sensitivity of spin valve sensors creates a problem when spin valve sensors are used to read older media--*i.e.*, they are too sensitive. Hence, the present invention addresses this problem by providing a reduced sensitivity spin valve sensor.

However, Suzuki, being only an MR sensor (which already has reduced sensitivity compared to a spin valve sensor) and not the more sensitive spin valve sensors, has no need to reduce the sensitivity of its MR sensors to read legacy media--the MR sensors of Suzuki are already in the proper sensitivity range to read older, less densely stored data. So they don't incur the problem of too much sensitivity that spin valve sensors incur in those conditions. Hence, there would be no motive for one of ordinary skill in the art to modify the MR sensors of Suzuki as Examiner claims.

In arguing why it is obvious to combine the teaching of Suzuki with Cain, Examiner characterizes Suzuki at page 3, 4th paragraph of the final Office action as follows:

> One of ordinary skill in the art would have been motivated to provide the reduced sensitivity sensor apparatus of Suzuki with the spin valve sensors as taught by Cain et al. as it would eliminate dependency on the direction of the sense current.

Applicant respectfully submits that, first, the apparatus of Suzuki is not a reduced sensitivity apparatus, it is only an MR sensor with full sensitivity relative to other MR sensors. It is only of less sensitivity when compared to the more recent spin valve sensors, which are of different design and are intended to read media of different storage density and therefore magnetic stripe size. The very problem addressed by the present invention goes to the heart of this difference--older MR sensors are unable to read newer media because they are not sensitive enough, while newer spin valve sensors are unable to read older media because they are too sensitive. The present application points to this issue at page 4, lines 3-18:

> Generally, a variety of different signal flux levels, i.e. levels of the magnetic field generated by the magnetic tape media, can be produce from various data patterns recorded on a magnetic tape. For example, low density patterns present a larger magnetic flux to the spin valve sensor leading to higher signal amplitude than high density patterns which have a lower level of magnetic flux. A spin valve head is typically designed and optimized to read the high density patterns in order to have significant amplitude for signal detection. However, the high input flux from a low density pattern can drive a spin valve sensor designed for high density operation into non-linear portions of the spin valve response curve. This leads to readback distortions and may even cause the spin valve sensor to magnetically saturate.

Examiner's proposal to combine the two references essentially suggests we transform the MR sensor of Suzuki to the spin valve sensor of Cain while keeping the rest of Suzuki's apparatus. However, such a substitution would completely change the device of Suzuki. In short, one cannot merely substitute a spin valve sensor into the apparatus of Suzuki, which is designed to work with an MR sensor. That would transform the device of Suzuki into a spin valve sensor device, making the other parts of the apparatus (which Examiner cites against the present application) unnecessary and/or incompatible.

Second, the dependency on the direction of the sense current is a necessary trade off and not a strict advantage that would motivate combining the two references. One cannot have an MR sensor that lacks sense current direction dependency, because that is a property of spin valve sensors. Making such a substitution would fail because the remainder of the apparatus of Suzuki is designed to work with an MR sensor. Making the substitution proposed by Examiner would require substituting the entire teaching of Suzuki with that of Cain or another spin valve apparatus. Examiner cannot pick and choose elements that are not compatible with each other in order to piece together the elements of the present invention.

Such a substitution as proposed by Examiner would require radical modification of Suzuki because Suzuki is an MR sensor device, not a spin valve sensor device. "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *In re Hedges*, 228 U.S.P.Q. 685, 687 (Fed. Cir. 1986).

Further, neither Suzuki nor Cain teaches or suggests a modification as proposed by Examiner. Even if such a modification were possible, which Applicants do not admit, the mere fact that a prior art reference can be readily modified does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Laskowski*, 871 F.2d 115, 10 U.S.P.Q.2d 1397 (Fed. Cir. 1989) and also *see In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992) and *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1993). The examiner may not merely state that the modification would have been obvious to one of ordinary skill in the art without pointing out in the prior art a suggestion of the desirability of the proposed modification.

In the present case, Examiner has cited nothing in the references suggesting the desirability of such a modification.

2. Neither device teaches a reduced sensitivity spin valve sensor. Suzuki teaches a full sensitivity MR sensor, while Cain teaches a full sensitivity spin valve sensor. Combining the two would not produce a reduced sensitivity spin valve sensor as claimed.

Even if the two references were properly combinable, which Applicant's do not agree, the combination would not produce the claimed invention. Suzuki teaches an MR sensor, and does not mention or describe reducing the sensitivity of the MR sensor. To the contrary, Suzuki is directed to producing a high sensitivity low distortion MR head. Suzuki addresses the problem of choosing between MR heads with a yoke (which moves them a slight distance from the media and thereby decreases sensitivity) and one disposed just above the media. The yoke style, while less sensitive, has advantages in that it is more reliable. Suzuki is aimed at retaining the reliability of the yoke while **increasing** the sensitivity to match that of the MR sensor disposed just above the media.

Hence, Suzuki is concerned not with reducing sensitivity, but with increasing it, and not in a spin valve sensor, but in a MR sensor. Suzuki does not teach or suggest a reduced sensitivity spin valve sensor.

Cain does teach a spin valve sensor apparatus, but Examiner only cites Cain to substitute wholesale the spin valve sensor of Cain into the apparatus of Suzuki. For the reasons described above, Applicants respectfully submit that such a substitution would not work. Further, Cain has no teaching or suggestion of reducing the sensitivity of the spin valve sensor. To the contrary, Cain teaches a high sensitivity spin valve sensor. For example, Cain's abstract states in the last sentence:

> The signal strength of the yoke spin valve MR sensor is superior to an anisotropic MR sensor and is easier to fabricate.

Therefore, the rejection of claims 3-7 and 10-14 under 35 U.S.C. § 103 has been overcome.

II. Conclusion

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: 4.2.04

Respectfully submitted,

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